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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,262	07/25/2003	Hakan P.O. Larsson	03370-P0047A	7595

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EXAMINER

WILLIAMS, THOMAS J

ART UNIT	PAPER NUMBER
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3683

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/627,262	Applicant(s) LARSSON ET AL.	
	Examiner Thomas J. Williams	Art Unit 3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Acknowledgment is made in the receipt of the amendment filed May 15, 2006.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-12 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,635,761 to Smith et al. in view of US 5,520,267 to Giering et al. and in view of Antony et al.

Re-claim 1, Smith et al. teach a modular disc brake comprising a service brake mechanism (the brake mechanism is capable of use as a service brake) having a thrust unit and modules in the form of a frame 12, a cover 60, and a house 30, part of the house is positioned between the frame and the cover and is mounted to be substantially unloaded during braking (note the position of bolts 50); the frame includes a recess (defined by the circumferential wall of

Art Unit: 3683

the frame and the inwardly extending flanges abutting the house) having a bottom, the bottom of the recess has an opening for the thrust unit to pass therethrough; the house has a bottom, the bottom of the house has an opening adapted to allow the thrust unit to pass therethrough; wherein the house is disposed within the recess in the frame such that the opening in the house is aligned with opening in the recess such that the thrust unit 26 passes through the bottom of the house and the bottom of the recess. However, Smith et al. fail to teach the use of a plurality of thrust units, with each unit passing through its own opening in both the house and the frame.

Giering et al. teach a brake actuator that utilizes either one or two thrust units (see figures 1 and 6). It would have been obvious to one of ordinary skill in the art to have provided the disc brake apparatus of Smith et al. with a plurality of thrust units in place of just one thrust unit as taught by Giering et al., thus providing a more even distribution of force over the circumferential length of the friction pad.

Antony et al. teach each thrust unit passes through its own opening. It would have been obvious to one of ordinary skill in the art to have provided the brake disc apparatus of Smith et al. as modified by Giering et al. with a plurality of openings in each of the frame 12 and housing 30 for receiving each thrust unit as taught by Antony et al., thus providing increased stability for each thrust unit and increased rigidity for the frame and housing by minimizing the overall size of the openings relative to the frame bottom and housing bottom.

Re-claim 2, Smith et al. teach a lower part of the house received in the recess.

Re-claim 3, Smith et al. fail to teach the house being made from a plastic. The use of plastic in place of metal is known in the art as a way of reducing costs and weight. It would have been obvious to one of ordinary skill in the art to have manufactured the house of Smith et al.

Art Unit: 3683

from a plastic material, thus reducing manufacturing costs as well as the overall weight of the brake disc apparatus.

Re-claim 5, Smith et al. teach the brake pre-mounted in the house 30.

Re-claim 6, Smith et al. teach the cover 60 covering an open end of the house (figure 2).

Re-claim 7, Smith et al. teach the house 30 open in one direction to receive the brake, and open in another direction to receive the thrust unit, the house has a space for a lever 70.

Re-claim 8, Smith et al. teach the frame 12 having openings for receiving a plurality of pull rods 50, each pull rod is clamped between the frame 12 and the cover 60, the pull rods have heads at one end 52 and are threaded at another end. However, Smith et al. fail to teach the use of nuts for holding the pull rods in place, but rather have the pull rods threaded to the frame. It would have been obvious to one of ordinary skill in the art to have simply passed the pull rods through the frame of Smith et al. and to have used nuts when securing the pull rods in place, this would have reduced costs by eliminating the need for providing threaded holes in the frame.

Re-claims 9 and 16, Smith et al. teach a gasket between the house and the cover, see gasket located in element 48. This is interpreted as being between the house and the cover, when viewing the house as an elongated member.

Re-claims 10 and 17, the house is pre-tensioned by the pull rods.

Re-claim 12, Smith et al. fail to teach the pull rods not passing through the house. It would have been an obvious to one of ordinary skill in the art as a matter of design choice to have simply placed the pull rods of Smith et al. outside the house, such as by shrinking the size of the house to fit between the pull rods thus reducing weight, and since applicant fails to disclose that having the pull rods outside the house solves any stated problem or is for any

Art Unit: 3683

particular purpose and it appears that having the pull rods of Smith et al. outside the house would have performed equally well. It is noted that Smith et al. specifically teach the pull rods are not threaded to the house, thus interaction between the pull rods and house is not necessary.

Re-claim 14, Smith et al. teach a modular disc brake comprising a brake mechanism having a thrust unit and modules in the form of a frame 12, a house 30, a cover 60, and a number of pull rods 50, the pull rods clamp between the frame and the cover and pre-tension the house; the frame includes a recess having a bottom, the bottom of the recess has an opening for the thrust unit to pass therethrough; the house has a bottom, the bottom of the house has an opening adapted to allow the thrust unit to pass therethrough; wherein the house is disposed within the recess in the frame such that the opening in the house is aligned with opening in the recess such that the thrust unit 26 passes through the bottom of the house and the bottom of the recess. However, Smith et al. fail to teach the pull rods as not passing through the house, or the use of a plurality of thrust units, with each unit passing through its own opening in both the house and the frame.

It would have been an obvious to one of ordinary skill in the art as a matter of design choice to have simply placed the pull rods of Smith et al. outside the house, thus decreasing the size of the house to fit between the pull rods, resulting in an overall reducing in weight, and since applicant fails to disclose that having the pull rods outside the house solves any stated problem or is for any particular purpose and it appears that having the pull rods of Smith et al. outside the house would have performed equally well. It is noted that Smith et al. specifically teach the pull rods not threaded to the house, thus interaction between the pull rods and house is not necessary.

Art Unit: 3683

Giering et al. teach a brake actuator that utilizes either one or two thrust units (see figures 1 and 6). It would have been obvious to one of ordinary skill in the art to have provided the disc brake apparatus of Smith et al. with a plurality of thrust units in place of just one thrust unit as taught by Giering et al., thus providing a more even distribution of force over the circumferential length of the friction pad.

Antony et al. teach each thrust unit passes through its own opening. It would have been obvious to one of ordinary skill in the art to have provided the brake disc apparatus of Smith et al. as modified by Giering et al. with a plurality of openings in each of the frame 12 and housing 30 for receiving each thrust unit as taught by Antony et al., thus providing increased stability for each thrust unit and increased rigidity for the frame and housing by minimizing the overall size of the openings relative to the frame bottom and housing bottom.

Re-claim 15, Smith et al. teach a modular disc brake comprising a service brake mechanism (the brake mechanism is capable of use as a service brake) having a thrust unit and modules in the form of a frame 12, a house 30, a cover 60, wherein the house is mounted not to take up any load during braking (note the position of bolts 50); the brake is a single pre-mounted unit received in the house; the cover covers an open end of the house; the house has a space for a lever 70 of the brake; the frame and cover have openings for a plurality of pull rods 50; the frame includes a recess having a bottom, the bottom of the recess has an opening for the thrust unit to pass therethrough; the house has a bottom, the bottom of the house has an opening adapted to allow the thrust unit to pass therethrough; wherein the house is disposed within the recess in the frame such that the opening in the house is aligned with opening in the recess such that the thrust unit 26 passes through the bottom of the house and the bottom of the recess. However, Smith et

Art Unit: 3683

al. fail to teach the house made from plastic, the use of a plurality of thrust units, with each unit passing through its own opening in both the house and the frame, or the use of nuts for holding the pull rods 50 in place.

The use of plastic in place of metal is known in the art as a way of reducing costs and weight. It would have been obvious to one of ordinary skill in the art to have manufactured the house of Smith et al. from a plastic material, thus reducing manufacturing costs as well as weight.

Giering et al. teach a brake actuator that utilizes either one or two thrust units (see figures 1 and 6). It would have been obvious to one of ordinary skill in the art to have provided the disc brake apparatus of Smith et al. with a plurality of thrust units in place of just one thrust unit as taught by Giering et al., thus providing a more even distribution of force over the circumferential length of the friction pad.

Antony et al. teach each thrust unit passes through its own opening. It would have been obvious to one of ordinary skill in the art to have provided the brake disc apparatus of Smith et al. as modified by Giering et al. with a plurality of openings in each of the frame 12 and housing 30 for receiving each thrust unit as taught by Antony et al., thus providing increased stability for each thrust unit and increased rigidity for the frame and housing by minimizing the overall size of the openings relative to the frame bottom and housing bottom.

Smith et al. teach the pull rods threaded to the frame and not the use of threaded nuts for providing tension. It would have been obvious to one of ordinary skill in the art to have simply passed the pull rods through the frame of Smith et al. and to have used threaded nuts when having secured the pull rods in place, this would have reduced costs by eliminating the need for

Art Unit: 3683

providing threaded holes in the frame. Each method of securing the cover to the frame is considered by the examiner to be functional equivalent and would have been a mere engineering choice when having decided the final mode of attachment.

Response to Arguments

5. Applicant's arguments filed May 15, 2006 have been fully considered but they are not persuasive. It is the opinion of the examiner that the end portion, as formed by the shoulder member in the recess in Smith et al. can be broadly interpreted as a bottom, in the same manner as the end portion of the recess in the instant invention is defined as a bottom. As such it appears that the only substantial difference between the instant invention and Smith et al. is the use of a plurality of thrust units, wherein each thrust unit passes through an individual hole formed in the bottom surface of the recess. Thus, the examiner relies upon Geiring et al. for teaching the use of a plurality of thrust units in place of a single thrust unit, as is used in Smith et al. The examiner then relies upon Antony et al. as teaching a bottom portion with a plurality of openings, each opening is designed to receive an individual thrust unit, as required by the claim language. Therefore, the examiner believes that one of ordinary skill in the art, when having used a plurality of thrust unit members in Smith et al. would have been motivated to provide individual holes in the bottom surface for each thrust unit. By utilizing individual smaller openings for each thrust member rather than a single large opening one would have maintained adequate caliper rigidity, as required for absorbing an applied braking torque. It is noted that Smith et al. teach a mechanically actuated brake, which forms the basis of the rejection. The fluid actuation aspect of Smith et al. is not relevant to the rejection.

The remarks regarding the distribution of forces acting on the piston in the apparatus of Smith et al. have been carefully considered. However, the desirability of using two thrust members in the apparatus of Smith et al. should not in question, but only the that two thrust members could have been used in the apparatus of Smith et al. in view of the prior art. As stated above the only substantial difference between the instant invention and Smith et al. is the use of two thrust members versus a single thrust member. This modification is considered by the examiner to have been obvious in light of the prior art, and as such the rejection is maintained.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

7. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Thomas Williams whose telephone number is 571-272-7128. The examiner can normally be reached on Tuesday from 1:00 PM to 7:00 PM and Wednesday-Friday from 6:30 AM to 6:00 PM.

Art Unit: 3683

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James McClellan, can be reached at 571-272-6786. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-6584.

TJW

June 26, 2006

THOMAS J. WILLIAMS
PRIMARY EXAMINER

Thomas Williams

AV 3683

6-26-06